

produced daily rains over the North Pacific States and a substantial rainfall in nearly all parts of California. The last of this series of lows passed inland on the 9th, attended by general rains over the entire State of California, and this was quickly followed by rising pressure over the ocean and falling pressure over the Aleutian Islands and the Gulf of Alaska. The storms of the first 10 days of the month made necessary the frequent display of storm warnings on the coasts of the north Pacific States and also on the north California coast. These warnings were in practically every instance verified. During the period from the 10th to the 14th the pressure rose decidedly over the region west of the Rocky Mountains and the weather became unduly cool for the season, with frequent frosts in California and freezing temperatures in other interior parts of this forecast district, but there was no appreciable damage done thereby.

From the 11th on to the 21st the pressure remained abnormally low over the Aleutian Islands and the north part of the Gulf of Alaska, and it was observed during this period that while rains were frequent in Washington and Oregon and extreme northwestern California, no rain fell elsewhere in California. While the center of this main depression was over the Alaskan region referred to, one secondary depression after another passed from it eastward, requiring frequent displays of storm warnings north of Cape Blanco. These displays were practically without exception followed by winds of gale force, with thick, rainy weather, along that part of the coast where the warnings were ordered. At the same time there was a tendency for high barometric pressure to persist over the plateau region. The most significant of these areas of maximum pressure appeared over the northwestern States on the 22d and, moving slowly east-southeastward, dominated the meteorological conditions west of the Rocky Mountains until the end of the month. It is worthy of note that this high pressure made its appearance over the Northwestern States following the eastward movement of an area of high barometer of equal magnitude which first made its appearance north of Midway Island on the 17th and 18th. In other words, the apparent period of time required for this HIGH to cross the eastern Pacific from the longitude of Midway Island was approximately between four and five days, or at the rate of 10°, in longitude, per day.

Following the 21st another deep depression moved eastward over the Aleutian Islands to the Gulf of Alaska and the pressure remained low over this area until the close of the month, during which time the pressure continued abnormally high over the region west of the Rocky Mountains, attended by generally fair weather with temperature near or somewhat below the normal in nearly all sections except southern California, where temperatures were unseasonably high.—*E. H. Bowie.*

RIVERS AND FLOODS

By H. C. FRANKENFIELD

There were no floods during the month of November except in the Willamette River of Oregon and a few of its tributary streams.

After a season that was the driest of record heavy rains set in about October 25 west of the Cascade Mountains, and during the nine-day period from October 25 to November 2, inclusive, the precipitation ranged from about 3.5 to more than 20 inches. The heaviest rains

fell on the southern coast, but over portions of the Willamette Valley the fall exceeded 14 inches. As the soil was extremely dry, the floods were not severe, and flood stages were not general except in the upper tributaries. There was a second rise later in the month from some moderately heavy rains falling upon the saturated soil, and the main stream rose to higher stages than were reached during the first rise.

Warnings were issued at the proper time and no serious preventable damage occurred. The total losses reported amounted to \$66,700, almost entirely to railroad property, highways and bridges.

Beginning with December 1, 1924, all published stages of water at locks and dams on the Ohio River will be referred to the zero of the *low-water* gage at each dam. Changes, where made, were for the purpose of securing uniformity and will prove of material assistance in the efficient operation of the numerous locks and dams.

| River and station | Flood stage | Above flood stages—dates | | Crest | |
|---|----------------|--------------------------|-----|------------------|---------|
| | | From— | To— | Stage | Date |
| ATLANTIC DRAINAGE | | | | | |
| Santee: Rimini, S. C.----- | <i>Feet</i> 12 | 24 | 24 | <i>Feet</i> 12.0 | 24 |
| PACIFIC DRAINAGE | | | | | |
| Willamette: | | | | | |
| Eugene, Oreg.----- | 10 | { 1 | 3 | 14.0 | 1 |
| Oregon City, Oreg.----- | 12 | { 22 | 22 | 12.3 | 22 |
| Willamette (Coast Fork) Saginaw, Oreg.----- | 12 | { 24 | 24 | 12.0 | 24 |
| Oreg.----- | 9 | { (1) 2 | 3 | 12.4 | Oct. 31 |
| Santiam: Jefferson, Oreg.----- | 10 | { 2 | 2 | 11.0 | 2 |
| | | { 22 | 22 | 13.8 | 22 |

¹ Continued from last month.

MEAN LAKE LEVELS DURING NOVEMBER, 1924

By UNITED STATES LAKE SURVEY

[Detroit, Mich., December 3, 1924]

The following data are reported in the "Notice to Mariners" of the above date:

| Data | Lakes ¹ | | | |
|---|--------------------|--------------------|-------------|-------------|
| | Superior | Michigan and Huron | Erie | Ontario |
| Mean level during November, 1924: | | | | |
| Above mean sea level at New York.----- | Feet 601.72 | Feet 578.76 | Feet 571.08 | Feet 244.95 |
| Above or below— | | | | |
| Mean stage of October, 1924.----- | — .17 | — .42 | — .62 | — .50 |
| Mean stage of November, 1923.----- | — .17 | — .30 | + .12 | .61 |
| Average stage for November, last 10 years.----- | — .76 | — 1.36 | — .72 | — .47 |
| Highest recorded November stage.----- | — 1.79 | — 4.16 | — 2.59 | — 2.87 |
| Lowest recorded November stage.----- | + .22 | — .30 | + .38 | + 1.54 |
| Average relation of the November level to— | | | | |
| October level.----- | | — .2 | — .2 | — .2 |
| December level.----- | | + .2 | + .1 | + .2 |

¹ Lake St. Clair's level: In November, 1924, 573.74 feet.

EFFECT OF WEATHER ON CROPS AND FARMING OPERATIONS, NOVEMBER, 1924

By J. B. KINCER

General conditions.—The first half of November was characterized by mild temperatures and very little rainfall in practically all sections east of the Rocky Mountains, and droughty conditions had become rather severe quite generally in that area. The principal effects of the deficient moisture in the interior and South were the dry-